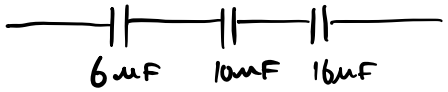
Ch. 29
CQ: 10
P: 20, 22, 54

29.P.20



$C = 3.03\ \mu F$

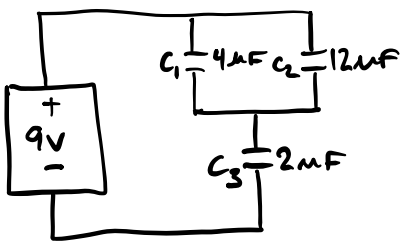
Series:

$$\left(\frac{1}{6} + \frac{1}{10} + \frac{1}{16}\right)^{-1} = 3.03\mu F$$

29.P.22

Parallel 20 μF capacitor

29.P.54



Q? Series same
ΔV? Parallel same

$Q = C\Delta V$

$C = \frac{Q}{\Delta V}$

C_1: ΔV = 1V, C = 4μF, Q = 4μC

C_2: ΔV = 1V, C = 12μF, Q = 12μC

$C_1 + C_2 = 16\mu F$

$C_{eq} = \left(\frac{1}{16\mu F} + \frac{1}{2\mu F}\right)^{-1}$

$C_{eq} = 1.78\mu F$

Q: $Q = C \cdot \Delta V$

$C = 1.78 \times 10^{-6} F$

$\Delta V = 9V$

$Q = 1.6 \times 10^{-5} C$

C_1: ΔV = 1V, Q = 4μC
C_2: ΔV = 1V, Q = 12μC
C_3: ΔV = 8V, Q = 16μC

$C_4 = 16\mu F$

$\Delta V = \frac{Q}{C} = 1V$

$Q = 16\mu C$

$C = 16\mu F$

$C_3 = 2\mu F$

$\Delta V = \frac{Q}{C} = 8V$

$Q = 16\mu C$

$C = 2\mu F$

29.CQ.10

$C = \frac{Q}{\Delta V} = \frac{\epsilon_0 A}{d}$

$C = \frac{Q}{\Delta V}$ $C = \frac{\epsilon_0 A}{d}$

a.) Potential difference is the same

b.) It is cut in half

c.) It is cut in half